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XVII.—*Description of two Andamanese Skulls.* By GEORGE BUSK, F.R.S., Vice-Pres. Eth. Soc.

[*Read June* 13*th*, 1865.]

THE two crania which form the subject of this communication belong to the collection of the Middlesex Hospital, to which they were presented by Dr. Chas. Smith, a surgeon in H.M. Indian army.

They constitute a very interesting and important addition to our knowledge of the cranial conformation of the curious people to which they belong, and which has hitherto been in a great measure confined to the description of a cranium possessed by Dr. Mouatt, given on a former occasion in this Society by Prof. Owen.

The skulls are stated to be those of a male and female, and the characters they respectively present are, so far as they go, confirmatory of this representation. It should be remarked, however, that the lighter or more delicately formed of the two has belonged to a much younger individual than the other, and consequently that its different character may, in part at any rate, be assigned to its age. In it the sutures are not only open but quite loose, as they would ordinarily be in a skull of between sixteen and nineteen; but at the same time the third molar has been fully cut, though perhaps only recently, as the second molar is but very little worn.

In general character the crania agree very closely, though differing in some respects, as will afterwards be pointed out. Their dimensions, as will be seen from the subjoined table, are pretty nearly equal, and very close to those of the skull described by Professor Owen, and which, for convenience sake, I shall term Dr. Mouatt's cranium, whilst the present two will be named Dr. Smith's, No. 1 and No. 2; the former being that of the male, and the other of the female, or younger individual. The proportionate breadths of these three crania are:—

Dr. Mouatt's - -	about ·830
Dr. Smith's, No. 1 - - -	·776
„ No. 2 - - -	·828

from which two would be regarded, in common language, as brachy-, and the third as dolichocephalic; but in reality it appears to be more correct to regard them all as brachycephalic, for the reason that the comparative narrowness of No. 1 is probably due, as I consider, to an early closure of the coronal and sagittal sutures, of which the former is completely obliterated throughout its whole length, and the latter from about its anterior two-thirds, whilst the remainder is pretty nearly in the same condition. At the same time the lambdoidal, squamous, and fronto-sphenoidal sutures are all open; and there seems, therefore, to be some reason for the belief that the first-named sutures have in this case been prematurely closed.

The remarkably open condition of the sutures in the second of Dr. Smith's crania, which may be assumed to be that of a person probably nineteen or twenty years of age, may justify the assumption that in the Andamanese there is not normally the same tendency to an early closure of the sutures, as is manifested so frequently in the African negro.

Both crania are prognathous; though that of the younger individual is considerably more so than the other, and they are both strongly phenozygous. In both these characters they resemble Dr. Mouatt's cranium.

No. 1 cranium is thick and heavy, and the muscular impressions are all unusually strongly marked. In the interior, the petrous bone may be seen to be greatly developed, with the superior angle remarkably elevated and acute.

1. *Norma lateralis.*—In this view of the cranium, the outline of the forehead, though low, is tolerably rounded; the vertical region presents a slight depression, and the occipital is vertical, though not flattened, The fronto-sphenoidal and squamosal sutures, as above stated, are open, but from the complete closure of the coronal, it cannot be determined whether the alisphenoid and parietal bones met or not; they seem to have just touched by an acute angle. The parieto- and occipito-mastoid sutures are extremely complex, and the mastoid process enormously developed.

2. *Norma occipitalis.*—In this view what is chiefly to be remarked is the almost complete closure of the posterior portion of the sagittal, and the open condition, except just in the middle, of the lambdoidal sutures. The latter is complex, and contains several small Wormian bones. The occipital region is flattened on the sides, and the greatest width of the cranium is very nearly at the parietal eminences. The occipital ridges and spine are but slightly developed.

3. *Norma frontalis.*—The forehead is contracted. The frontal sinuses distinct, long, and narrow, and the supraorbital border, though not thickened, yet prominent. The orbits large, quadrangular. The fronto-nasal suture low down, and there is no hollow at that part. The nasals broad, but short, moderately arched below, and flat in the middle. The nasal processes of maxillaries broad and convex, so that the whole of the nasal promontory is thick and clumsy. The opening of the nares broad-oval. A well-marked nasal spine.

4. *Norma verticalis.*—In this view the prognathous, and more especially the phenozygous, formation of the cranium is at once

evident. The complete closure of the sagittal and coronal sutures has been before adverted to, as well as the sort of constriction which is evident in the vertical or mid region. The temporal lines at this point approach to within 2″.8 of each other. The general outline of the skull in this view is a truncated oval.

5. *Norma basalis.*—The remaining teeth are the three m. on either side—the right canine and 1 pm., and the 1 pm. on the left side ; and it is to be remembered that on both sides the canine is placed directly external to the 1 pm. All these teeth are perfectly sound ; they are all worn to a uniform flat surface. The alveolar border is very deep, and forms a rather narrow arch, somewhat pointed in front—a form doubtless owing to the abnormal position of the canine and premolar teeth, to which also may be attributed the diminished prognathism exhibited in this cranium. The *foramen magnum* is rhomboidal in form, and large. The condyloid processes somewhat immersed, and irregular in shape. The styloid processes enormous, hollow, and each is furnished with a large nutrient foramen behind, about the middle of its length. The zygomata thick and expanded.

No. 2.—The smaller, or female cranium, is thin and light, and the sutures, as above said, are all open and loose. In the interior, the petrous bone is well developed. and the superior angle sharp and prominent.

1. *Norma lateralis.*—In the side view the outline exhibits a tolerably uniform arch, the forehead being somewhat depressed, and the occiput slightly produced. The parietal and alisphenoids join for about a quarter of an inch. The parieto- and occipito-mastoid sutures are very complex ; the mastoid processes very short ; the parietal eminence very prominent.

2. *Norma occipitalis.*—A considerable wide depression exists along the course of the posterior half of the sagittal suture. The lambdoidal suture is very complex, and contains numerous ossa *triquetra.* Superior occipital ridge well marked, but there is no occipital spine. Occipital region much compressed on the sides ; the widest part of the cranium being in the middle of the parietals.

3. *Norma frontalis.*—Forehead narrow and depressed. Frontal sinuses very indistinctly marked. Supra-orbital border thin, but slightly prominent. Orbits large, quadrangular. Fronto-nasal suture low down. Nasal bones very small, forming a low ridge in the middle. No depression at fronto-nasal suture. Nasal opening oval, narrow above, with the apex truncated. A very distinct nasal spine.

4. *Norma verticalis.*—Prognathous and phenozygous condition very distinct. Outline sub-triangular, with a broad, shallow depression behind.

5. *Norma basalis.*—The remaining teeth are the 1 and 2 m. on either side—the latter slightly and the other considerably

worn. The sockets of the other teeth very regular; the alveolar border forming a uniform rounded arch, not very deep. The palato-maxillary suture is opposite 2 m. The foramen magnum large, rhomboidal; the condyles very prominent, long and narrow. Although the mastoid processes are short, the digastric fossa is remarkably broad and deep.

The various dimensions of these crania, together with those of Dr. Mouatt's cranium, are given in the following table, to which are also appended the corresponding mean dimensions of eight lower-caste Hindoos, male and female; and of thirteen, so termed, Veddah skulls from Ceylon. Those two classes of people have been selected partly on account of their geographical relations to the Andamanese, and partly because, in the small size of the cranium, they appear to approach perhaps the nearest of all mankind to the Andamanese. But, except in size, very considerable differences, in other respects, will be found to exist between them:

	Andaman. Midd. Hosp. No. 1, Male.	Andaman. Midd. Hosp. No. 2, Female.	Andaman. Dr. Mouatt's.	Mean.	Mean of 8 Hindoos or Lascars.	Mean of 13 Veddahs.
Length	6·7	6·3	6·3	6·43	6·62	6·74
Breadth	5·2	5·4	5·25	5·28	5·30	4·89
Height	5·3	5·4	5·15	5·28	5·52	5·46
Least frontal diameter	3·6	3·5	3·4	3·5	3·6	3·56
Greatest frontal diameter	4·3	4·2	4·3	4·26	4·45	4·27
Parietal breadth	5·0	5·2	5·1	5·1	5·07	4·70
Occipital „	4·0	4·0	3·9	4·0	4·08	4·0
Zygomatic „	5·3	4·75	4·9	5·0	4·78	4·68
Frontal radius	4·55	4·1	4·2	4·28	4·46	4·44
Vertical „	4·5	4·45	4·5	4·5	4·6	4·54
Parietal „	4·7	4·55	4·65	4·63	4·7	4·58
Occipital „	3·9	3·8	3·9	3·9	3·91	3·9
Maxillary „	4·1	3·8	3·75	3·9	3·67	3·61
Fronto-nasal „	3·8	3·35	3·35	3·5	3·5	3·5
Circumference	19·1	18·5	18·4	18·7	19·1	18·5
Longitudinal arc	13·6	13·2	13·7	13·5	13·9	14·1
Frontal longitudinal arc	4·6	4·6	4·5	4·56	4·81	4·8
Parietal ditto	4·9	4·7	4·6	4·73	4·86	4·76
Occipital ditto	4·1	3·9	4·6	4·2	4·22	4·47
Frontal transverse arc	11·6	10·8	10·8	11·1	11·3	11·2
Vertical „ „	12·0	11·9	12·1	12·0	12·26	11·9
Parietal „ „	12·9	13·1	12·7	12·9	12·85	12·3
Occipital „ „	10·6	11·0	10·4	10·6	10·89	10·6
Proportionate breadth	·776	·828	·833	·812	·795	·727
Proportionate height	·791	·857	·817	·821	·827	·809
Proportionate occipital radius	·582	·603	·619	·601	·585	·573
Proportionate maxillary radius	·611	·603	·595	·603	·560	·553
Propor. fronto-nasal radius	·507	·531	·531	·543	·524	·520
Difference between fronto-nasal and maxillary radii	0·30	0·45	0·40	0·38	0·18	0·22

The following are a few of the considerations to which we may be led by the study of the figures given in the above table.

They show, in the first place, that whilst the Andamanese are decidedly brachycephalic (.821), and the so-termed Hindoos moderately so (.775), the Veddahs are very decidedly dolichocephalic, (.727). Again, we find that in height the cranium of the Veddahs stands by far the lowest (.809), the Andamanese next (.821), and the Hindoos considerably higher (.827). But in all, the height considerably exceeds the breadth, in which respect the crania of all three races differ from those of the Tasmanian and of some of the Australian forms of skull, whilst they correspond with those of the occidental Negro.

The different degrees of prognathism exhibited in these three sets of crania are shown in the last column, which gives the difference in length between the maxillary and the fronto-nasal radii; this difference amounting to only 0".18 in the Hindoos, to 0".22 in the Veddahs, and to as much as 0".38 in the Andamanese, which are thus proved to be as prognathous as any race with which I am acquainted, or nearly so. And this character, taken in conjunction with the considerable height of the zygoma, shows very clearly the great proportionate development of the more animal part of the face, and generally the vigorous muscular development of the body in these little Negritoes.

The small size of the skull in all three will be at once perceived from the dimensions given; but some general idea of the comparative size, taken as a whole, in the three races may be obtained by adding together the length, breadth, height, and circumference in each set of crania respectively, when we have the following results:—

Hindoos - - - -	36·54
Andamanese - - - -	35·69
Veddahs - - - -	35·59

which show that the Veddahs have absolutely the smallest heads of the three. With respect to the three regions of the cranium, the numbers representing the frontal, parietal, and occipital regions, in the three sets of crania respectively, run thus:—

	Frontal Region.		Parietal Region.		Occipital Region.
Hindoo - - -	45·48	...	27·48	...	23·10
Andamanese - -	44·20	...	27·36	...	22·70
Veddah - - -	44·71	...	26·34	...	22·97

from which it would appear that the Andamanese, as compared with the other crania, is chiefly deficient in the frontal region, whilst he is considerably better furnished than the Veddah in the parietal, and very nearly his equal in the occipital, regions.

The following account of the skulls here described has been furnished to my friend Mr. Campbell de Morgan by Dr. Charles Smith, whose notices also on the habits, etc., of the Andamanese will be read with much interest:—

"The skulls that I sent you are those of a male and female, procured from Port Blair. From the position of the island in the Bay of Bengal, one would expect to find a variety of one of the Asiatic tribes in the aboriginal inhabitants; and it is remarkable that they have no affinity with any of the tribes of Burmah nor of Continental India, and are, without doubt, a small branch of the Negro (Negrito) race. But how or when were they planted in these far islands?

"The height of many that I measured averaged from 4 ft. 10 in. to a trifle under 5 feet. The females were all under 4 ft. 10 in. The African features well developed; lips thick; hair short and woolly; heels slightly projecting behind. Skin black and shining, as if polished with lampblack. Eyes bright and clear, with a well-developed forehead; in spite of which, they have proved most difficult to instruct. Children catch up words readily and repeat them, but they seem incapable of connecting words with corresponding ideas. In the proportion of about one in three of the males, I found the first bicuspid tooth doubled, as in one of the specimens I sent you.* The crowns of the molars are worn flat, as if from the use of a diet of roots or hard substances; but when these people were first discovered, and brought into intercourse with Europeans, and for long after, they would not eat rice, fruit, or vegetables. Animal food, as fish or pork, which they partially washed before eating, was the only article of food they could be induced to touch. Wild pigs abound in the islands. I observed that all used their teeth freely, as apparently their only cutting instruments. They have no idea of the use of clothing. Though forced to put on a garment when any of them visit the settlement, it is gladly dispensed with and left at the house when they swim back to the main island. Women wear the smallest piece of green leaf between the thighs, secured by the tendril of a creeper or a strip of bark. I have seen a woman take off her clothing, and sit as unconcernedly as if she were an animal: evidently she knew not that she was naked.

"They are all frightfully passionate and revengeful. Four men were murdered by a tribe about three months before I visited the islands, simply on their being refused more food, having already received as much as they could eat. They have been accused of cannibalism, but on no sufficient authority; in fact, very little is known of their social habits. Dr. Mouatt's book was written on very imperfect data, and even since then, though our intercourse with the natives has assumed a more regular form, it is very limited, owing to our ignorance of the language. A Mahometan convict escaped, and lived for a year among them, having, as he said, married two wives. He added but little to our previous knowledge, or what he related was not by any means to be trusted.

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* In this case, as described above, the 1 pm. is not doubled, but is placed on the inside of the canine. That this arrangement should be so common among the Andamanese is certainly surprising.

"The islands are highly fertile, and clothed with a superb growth of forest timber. Two splendid harbours, Port Blair and Port Cornwallis, are perfectly sheltered from the south-west monsoon. The climate is cooler, and as equable and favourable to vegetation as that of Singapore. Nutmegs, which are failing at Singapore from the alteration of climate consequent upon too extensive and promiscuous jungle clearances, will succeed on the Andamans. I saw some young trees flourishing.

"If the British Government would establish a reformatory for convicts on these islands, they would soon become valuable, and cost nothing. When I inspected the jails and establishments in November last, 509 native convicts entirely supported themselves from the produce of their gardens and farms, and were thus no charge to Government."